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SPILL RESPONSE CONTACT SHEET

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		(800	
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ational Response Center	(800) 424-8802	After Hours Emergencies	(360) 267-6766
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ational Oceanic Atmosphere		Northwest Region	(425) 649-7000
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upervisor of Salvage	(202) 695-0231		
		Emergency Management	(503) 378-6377
rmy Corps of Engineers			(800) 452-0311
azards to Navigation	(206) 764-3400		
azarus to mavigation	(200) /04-3400		

HOW TO USE THIS GEOGRAPHIC RESPONSE PLAN

Purpose of Geographic Response Plan (GRP)

This plan prioritizes resources to be protected and allows for immediate and proper action. By using this plan, the first responders to a spill can avoid the initial confusion that generally accompanies any spill.

Geographic Response Plans are used during the emergent phase of a spill which lasts from the time a spill occurs until the Unified Command is operating and/or the spill has been contained and cleaned up. Generally this lasts no more than 24 hours. The GRPs constitute the federal on-scene coordinators' and state on-scene coordinators' (Incident Commanders) "orders" during the emergent phase of the spill. During the project phase, the GRP will continue to be used, and the planned operation for the day will be found in the Incident Action Plan's Assignment List (ICS Form 204). The Assignment List is prepared in the Planning Section with input from natural resource trustees, the Incident Objectives (ICS Form 202), Operations Planning Worksheet (ICS Form 215), and Operations Section Chief.

Strategy Selection

Chapter 4 contains complete strategy descriptions in matrix form, response priorities, and strategy maps. The strategies depicted in Chapter 4 should be implemented as soon as possible, following the priority table in Section 2 with the "Potential Spill Origin" closest to the actual spill origin. These strategy deployment priorities may be modified by the Incident Commander(s) after reviewing on scene information, including: tides, currents, weather conditions, oil type, initial trajectories, etc.

It is assumed that control and containment at the source is the number one priority of any

response. If, in the responder's best judgment, this type of response is infeasible then the priorities laid out in Chapter 4, Section 2 take precedence over containment and control.

It is important to note that strategies rely on the spill trajectory. A booming strategy listed as a high priority would not necessarily be implemented if the spill trajectory and booming location did not warrant action in that area. However, the priority tables should be followed until spill trajectory information becomes available, and modifications to the priority tables must be approved by the Incident Commander(s).

The strategies discussed in this GRP have been designed for use with persistent oils and may not be suitable for other petroleum or hazardous substance products. For hazardous substance spills, refer to the Northwest Area Contingency Plan, Chapter 7000.

Standardized Response Language

In order to avoid confusion in response terminology, this GRP uses standard National Interagency Incident Management System, Incident Command System (NIIMS, ICS) terminology and strategy names, which are defined in Appendix A, Table A-1 (e.g. diversion, containment, exclusion).

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Willapa Bay Geographic Response Plan

Record of Changes

Date	Change Number	Summary of Changes	Initials of Person Making Change
	N/A	Origianl Release	N/A
March 1994	1	Entire GRP replaced w/ up-dated, reformated version	
March 2003	2 nd Change	Update of Chapter 4 using GIS based maps, and new priority tables based on trajectory modeling.	D Davis

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GEOGRAPHIC RESPONSE PLAN

1. INTRODUCTION: SCOPE OF THIS PROJECT

Geographic Response Plans are intended to help the first responders to a spill avoid the initial confusion that generally accompanies any spill. This document serves as the federal and state on-scene-coordinators "orders" during a spill in the area covered by this GRP (see Chapter 3 for area covered). As such, it has been approved by the U.S. Coast Guard Marine Safety Office and the Washington State Department of Ecology Spills Program. Changes to this document are expected as more testing is conducted through drills, site visits, and actual use in spill situations. To submit comments, corrections, or suggestions please refer to Appendix C.

GRPs have been developed for the marine and inland waters of Washington, Oregon, and Idaho. They are prepared through the efforts and cooperation of the Washington Department of Ecology, Washington Department of Fish and Wildlife, Oregon Department of Environmental Quality, Idaho State Emergency Response Commission, the U.S. Coast Guard, the Environmental Protection Agency, tribes, other state and federal agencies, response organizations, and local emergency responders.

GRPs were developed through workshops involving federal, state, and local oil spill emergency response experts, response contractors, and representatives from tribes, industry, ports, environmental organizations, and pilots. Workshop participants identified resources which require protection, developed operational strategies, and pinpointed logistical support. A similar process has been used for major updates.

Following the workshops, the data gathered was processed and reproduced in the form of maps and matrices which appear in Chapters 4 through 6. The maps in Chapters 5 and 6 were generated using Canvas. Maps for Chapter 4 were generated using ArcView GIS. The matrices were created using MS Excel, and the balance of each GRP was produced using MS Word.

The first goal of a GRP was to identify, with the assistance of the Washington State Natural Resource Damage Assessment Team, resources needing protection; response resources (boom, boat ramps, vessels, etc.) needed, site access and staging, tribal and local response community contacts, and local conditions (e.g. physical features, hydrology, currents and tides, winds and climate) that may affect response strategies. Note that GRPs only address protection of sensitive **public** resources. It is the responsibility of private resource owners and/or potentially liable parties to address protection of private resources (such as commercial marinas, private water intakes, and non-release aquaculture facilities).

Secondly, response strategies were developed based on the sensitive resources noted, hydrology, and climatic considerations. Individual response strategies identify the amount of boom necessary for implementation. The response strategies are then applied to Potential Spill Origins and trajectory modeling, and prioritized, taking into account factors such as resource sensitivity, feasibility, wind, and tidal conditions.

Draft strategy maps and matrices were sent out for review and consideration of strategy viability. Field verification was conducted for some strategies, and changes proposed by the participants were included in a semi-final draft, which was offered for final review to all interested parties and the participants of the field verification.

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Finally, the general text of the GRP was compiled along with the site description, reference maps, and logistical support.

Items included in Logistical Support:

- Location of operations center for the central response organization;
- Local equipment and trained personnel;
- Local facilities and services and appropriate contacts for each;
- Site access & contacts;
- Staging areas;
- Helicopter and air support;
- Local experts;
- Volunteer organizations;
- Potential wildlife rehabilitation centers;
- Marinas, docks, piers, and boat ramps;
- Potential interim storage locations, permitting process;
- Damaged vessel safehavens;
- Vessel repairs & cleaning;
- Response times for bringing equipment in from other areas.

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2. Site Description

Willapa Bay is a 100 square-mile estuary situated along the southern coast of Washington and is one of the most important estuaries on the West Coast. The bay has an ideal oyster growing habitat, and supports a wide diversity of wildlife.

Willapa Bay is considered to be one of the most productive bays along the Pacific. Salmon, bottom fish, oysters, crabs, clams, and shrimp are harvested from bay waters. The bay features mud and gravel beaches and saltgrass shores interspersed with wetlands and tidal flats. 20,000 acres of the bay has been set aside as a National Wildlife Refuge for habitat protection.

2.1. Physical Features

Steeply rising uplands border the bay to the north and east. To the south, across a low ridge, lies the Columbia River. The western margin of the bay is formed by a long, narrow sand spit – North Beach Peninsula – apparently formed by deposits from the Columbia River.

2.2. Hydrology

The drainage basin of Willapa Bay encompasses approximately 720 square miles, including most of Pacific County and portions of Grays Harbor, Lewis, and Wahkiakum counties. Rivers that flow into the bay include the Cedar, North, Willapa, Bone, Niawaikum, Palix, Nemah, Naselle, and Bear. Freshwater inflow into the bay from tributaries is low. The combined average daily runoff of all the rivers is approximately 0.004% of the bay volume.

2.3. Currents and Tides

A majority of Willapa Bay is broad and shallow with about 55 percent of the area exposed at lower tides. The difference in the volume of water between highest tides and lowest tides is approximately 45 percent of the bay volume. At mean high water, Willapa Bay covers about 79,000 acres, while at mean lower low water about 32,000 acres of bottom are exposed and 11,600 acres are shallower than six feet.

Conditions in the ocean determine how much water leaving the bay will return on the next incoming tide. According to the Army Corps of Engineers (1976), periods of ocean upwelling in summer promote thorough mixing of bay water and ocean water. Mixing may occur during storm periods with high wave actions. At other times, a plume of water from the Columbia River, acting as a discrete mass of water, tends to prevent mixing from occurring. Water from the bay can then move back and forth for several days.

The ocean current along the Washington coast reverses direction between summer and winter; the California current moves south in the summer and the Davidson inshore current moves north in the winter.

2.4. Winds

During the fall and winter, there is a prevailing flow of warm, moist air from a southwesterly direction. During the winter, weather disturbances crossing the North Pacific follow a southerly course that results in an increased number of storms striking the Washington coast. The frequency of storms over the North Pacific decreases in the spring, and the prevailing wind shifts to westerly, and then northwesterly by early summer. In the fall, the winds again come from a westerly direction.

If oil is spilled offshore, prevailing winds will play a role in spill direction depending on the season:

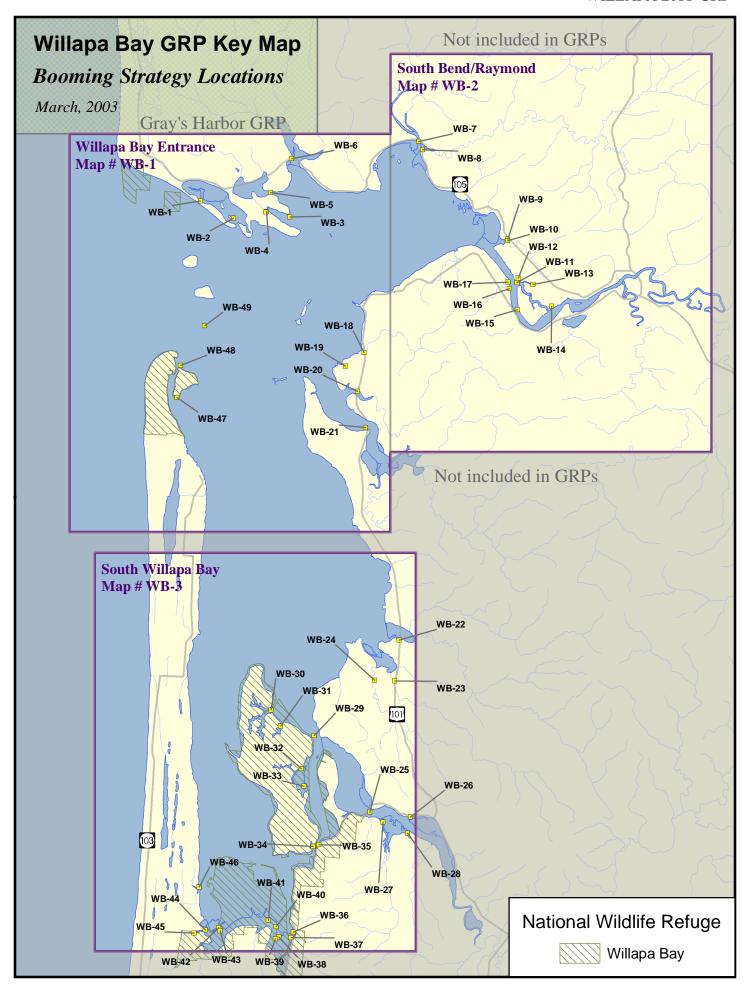
In the winter, the predominant winds are from the south and the current is circulating north. If oil is spilled offshore south of Willapa Bay, and it enters the mouth, it can be expected to hit the northern shore of the bay. If the spill does not enter Willapa Bay, the North Coast shoreline will be vulnerable.

In the summer, the predominant winds are from the north. The summer winds are persistent, but not as strong as the winter winds. Oil may enter Willapa Bay from the north and spread south. The increasingly variable nature of the winds in the spring, summer, and fall may reduce the predictability of the spill direction once it enters Willapa Bay.

2.5. Climate

The climate of the Willapa Bay basin is the marine west coast type, characterized by cool, dry summers and moderate winters with heavy rainfall ranging from 65 to 120 inches per year, depending on location.

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4. GENERAL PROTECTION/COLLECTION STRATEGIES

4.1. Chapter Overview

This chapter details the specific response strategies and resources to protect as outlined by the participants of the GRP workshop for the Willapa Bay area. It describes the strategies determined for each area and the prioritization of those strategies. Note that GRPs only address protection of sensitive **public** resources. It is the responsibility of private resource owners and/or potentially liable parties to address protection of private resources (such as commercial marinas, private water intakes, and non-release aquaculture facilities).

Maps & Matrices

The maps in this chapter provide information on the specific location of booming strategies. They are designed to help the responder visualize response strategies. Details of each booming strategy are listed in corresponding matrix tables. Each matrix indicates the exact location, intent and implementation of the strategy indicated on the map. The "Status" column describes whether the strategy has been visited or tested in the field, and the date of the visit/test. Most strategies include a number for the corresponding shoreline photo, which is available on the Washington Department of Ecology's internet site at http://www.ecy.wa.gov/apps/shorephotos/.

Major Protection Techniques

All response strategies fall into one of three major techniques that may be utilized either individually or in combination. The strategies listed in Section 4.2 are based on the following techniques, and are explained in detail in Section 4.3:

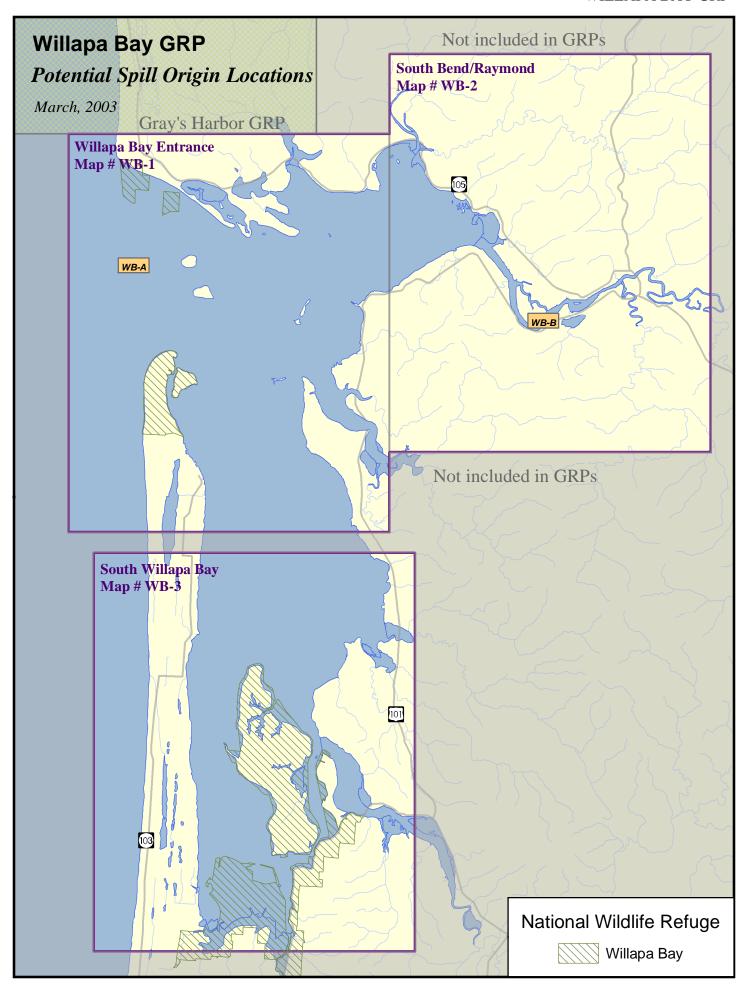
Dispersants: Washington State Policy currently does not allow use of dispersants in this area. Certain chemicals break up slicks on the water. Dispersants can decrease the severity of a spill by speeding the dissipation of certain oil types. Their use will require approval of the Unified Command. Dispersants will only be used in offshore situations under certain conditions, until further determinations are made by the Area Committee and published in the Area Contingency Plan.

In Situ Burning: Approval to burn in this area is unlikely due to the proximity of population to a potential burn site. Burning requires the authorization of the Unified Command, who determine conformance of a request to burn with the guidelines set forth in the Area Plan. This option is preferable to allowing a slick to reach the shore provided that population areas are not exposed to excessive smoke. Under the right atmospheric conditions, a burn can be safely conducted in relative close proximity to human population. This method works on many types of oil, and requires special equipment including a fire boom and igniters.

Mechanical Recovery and Protection Strategies: If a spill is too close to shore to use In Situ burning or dispersants, the key strategies are skimming and use of collection, diversion, or exclusion booming to contain and recover the oil, and prevent it from entering areas with sensitive wildlife and fisheries resources. These options are described in detail in Appendix A. Specific skimming strategies are not listed in the maps and matrices, but skimming should be used whenever possible and is often the primary means of recovering oil and protecting resources, especially when booming is not possible or feasible.

Priorities: The strategy priority tables (Section 4.2.) were developed using specific locations where spills are likely to occur. Trajectory modeling was used for each of these "Potential Spill Origins" to identify sensitive resources that would likely be impacted within the initial hours of the spill. A booming strategy priority table was developed for each of the "Potential Spill Origins" based on the sensitivity of resources, feasibility, etc. **Booming strategies should be deployed following the priority table for the "Potential Spill Origin" closest to the actual spill origin.** The map on page 4-2 shows the locations of all Potential Spill Origins for the Willapa Bay GRP. The booming strategies indicated in the priority tables are explained in detail in the Maps & Matrices section (Section 4.3.). It is implied that control and containment at the source is the number one priority of any response. If in the responder's best judgment this is not feasible, then the priorities laid out in the priority tables take precedence over containment and control.

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WILLAPA BAY GRP

4.2.2 Booming Strategy Priority Tables

Table 4-1

TOC

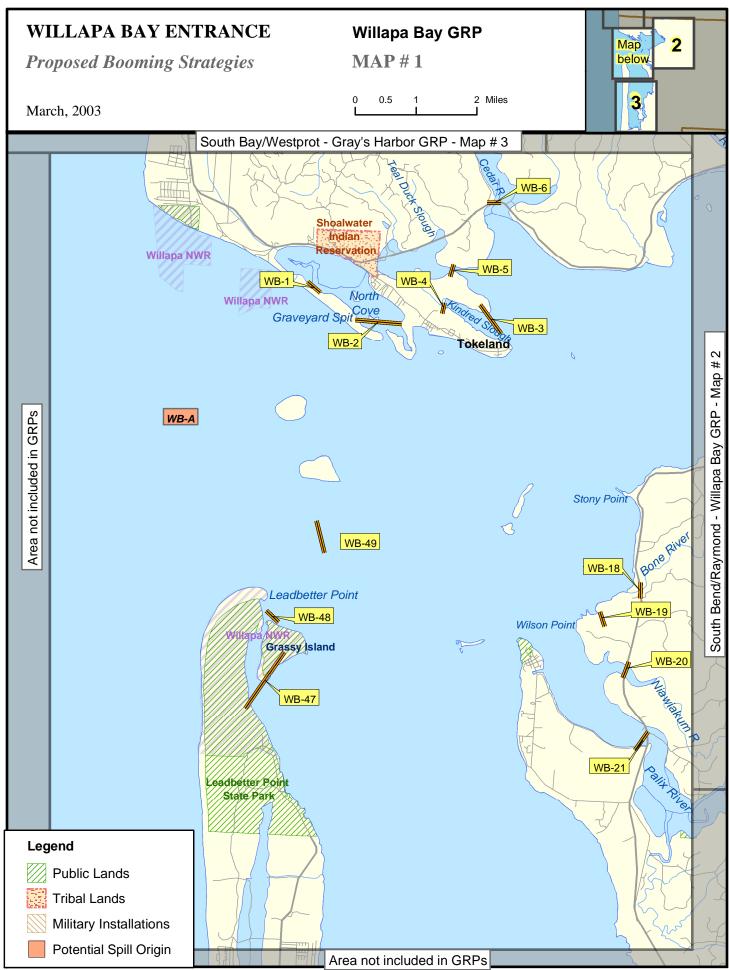
	gin: WB-A - Oil ent	ering Willapa Bay on	a flood tide from a source outside of
7			
BOOMING	STRATEGY	MAP PAGE	COMMENTS
PRIORITY	NUMBER	NUMBER	COMMENTE
1	WB-1	4-5	
2	WB-2	4-5	
3	WB-47	4-5	
4	WB-48	4-5	
5	WB-3	4-5	
6	WB-4	4-5	Tide Gate
7	WB-5	4-5	Tide Gate
8	WB-6	4-5	
9	WB-7	4-6	
10	WB-8	4-6	
11	WB-18	4-5	
12	WB-19	4-5	
13	WB-20	4-5	
14	WB-21	4-5	
15	WB-12	4-6	
16	WB-15	4-6	
17	WB-9	4-6	
18	WB-10	4-6	Tide Gate
19	WB-16	4-6	
20	WB-17	4-6	

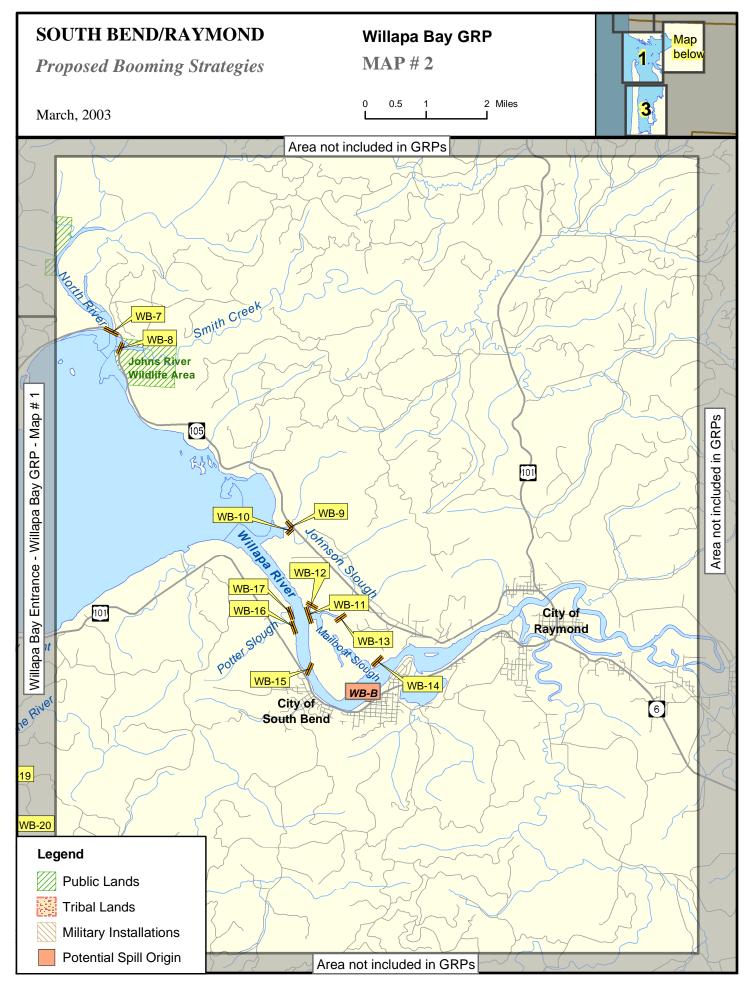
4-3 March 2003

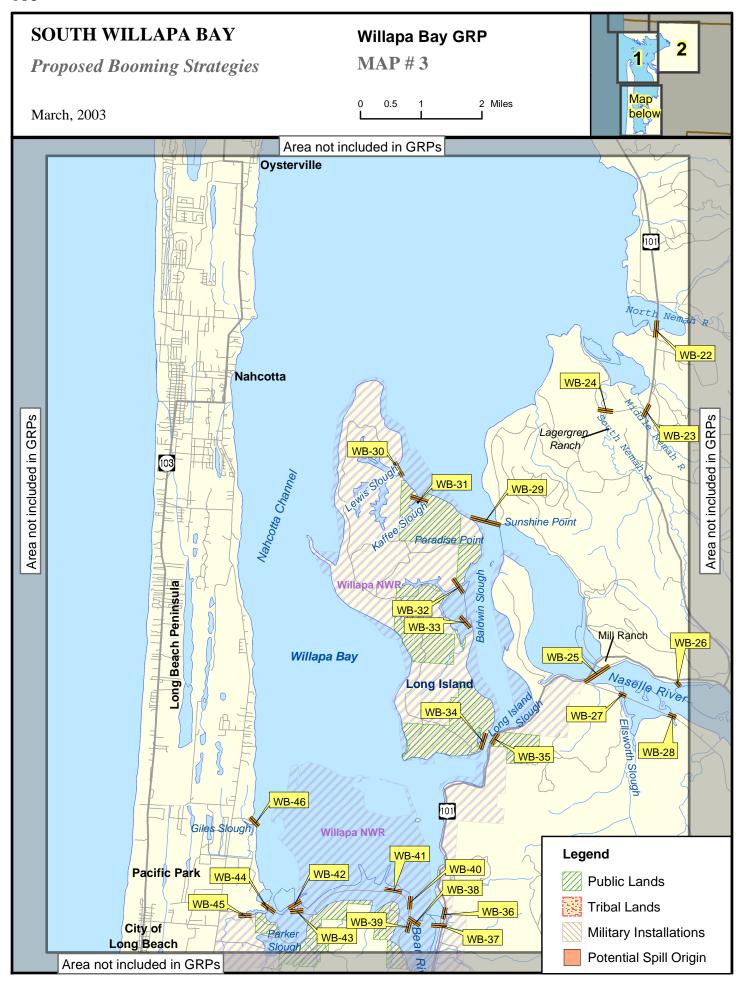
Table 4-4

Potential Spill Orig	gin: WB-B - Oil ent	ering Willapa Bay on	an ebb tide from a source in the Willapa
River			
BOOMING	STRATEGY	MAP PAGE	COMMENTS
PRIORITY	NUMBER	NUMBER	
1	WB-15	4-6	
2	WB-14	4-6	
3	WB-12	4-6	
4	WB-16	4-6	
5	WB-17	4-6	
6	WB-3	4-5	
7	WB-5	4-5	
8	WB-2	4-5	
9	WB-1	4-5	
10	WB-48	4-5	

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Proposed Booming and Collection Strategies: Matrices Strategy Response Length of Status Location **Strategy** Boom **Strategy Implementation Staging Area** Site Access **Resources Protected** North Cove Shorebird and PAC0023 Exclusion -Deploy boom across the west Tokeland waterfowl opening to marsh. Area nearly dry at Marina 46°-43.153'N Prevent oil from By boat only from concentrations, slough moving into marsh. 900' 124°-02.392'W Tokeland Marina. WB-1 low tide. (PAC0042). and marsh habitat. Deploy boom at angle to close off east entrance to marsh. Place boom Shorebird and North Cove Exclusion during flood tide or will need ATV's Tokeland waterfowl 46°-42.456'N Prevent oil from or helicopter. Area nearly dry at low Marina By boat only from concentrations, slough 124°-00.738'W moving into marsh. 1500' tide. (PAC0042). Tokeland Marina. and marsh habitat. WB-2 Kindred Slough Exclusion -Shorebird and PAC0048 Prevent oil from Install boom at an angle across Tokeland waterfowl 46°-42.562'N moving into slough entrance. Site can only be Marina By boat only from concentrations, slough 123°-58.268'W 2400' boomed at high tide. (PAC0042). Tokeland Marina. and marsh habitat. WB-3 slough. Must cross private farm land to get to Kindred Slough tide gate, access from Tide Gate Highway 105 at north Shorebird and PAC0047 Close tide gate. Deploy boom in Tokeland end of levee road. waterfowl 46°-42.917'N front of tide gate if gate cannot be Marina Permission is required concentrations, slough Exclusion - Keep 123°-59.482'W oil out of slough. closed or if it leaks. (PAC0042). and marsh habitat. WB-4 100' or use helicopter. Must cross private farm land to get to tide gate, access from Teal Duck Slough Tide Highway 105 at north Shorebird and Close tide gate. Deploy boom in Gate PAC0053 Tokeland end of levee road. waterfowl 46°-42.398'N Exclusion - Keep front of tide gate if gate cannot be Marina Permission is required concentrations, slough 123°-59.326'W oil out of slough. 100' closed or if it leaks. (PAC0042). or use helicopter. and marsh habitat. WB-5 Cedar River Install boom at an angle across river PAC0060 Exclusion mouth downstream of bridge at Take Hwy 105 from 46°-44.398'N Prevent oil from Highway 105. River may have tide Stage on Hwy Raymond toward Salmon, waterfowl 300' 105 at site. Tokeland. WB-6 123°-58.570'W moving up river. gate (need to verify). concentrations.

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Proposed Booming and Collection Strategies: Matrices Strategy Response Length of Strategy **Strategy Implementation** Status Location Boom **Staging Area** Site Access **Resources Protected** North River North River Resort or Smith Take Hwy 105 west Creek. Both PAC0083 Exclusion from Raymond to 46°-45.040'N Prevent oil from Install boom at an angle across river sites have launch North River Bridge, Salmon, waterfowl at bridge on Highway 105. 600' 10.5 miles. 123°-53.187'W moving up river. concentrations. **WB-7** ramps. Smith Creek Take Hwy 105 west PAC0083 Exclusion from Raymond to Install boom at an angle across creek | Smith Creek 46°-44.815'N Smith Creek Bridge, Prevent oil from Salmon, waterfowl 400' at bridge on Highway 105. **WB-8** 123°-53.085'W moving up creek. boat launch. 10 miles. concentrations. Take Hwy 105 from Exclusion -Raymond toward Prevent oil from Tokeland, Go 5.4 Fleiss Creek Salmon, shorebird and PAC0098 miles from turnoff of waterfowl moving into Install boom at an angle across slough/ creek at bridge on Highway 46°-42.387'N slough/ creek Stage along Hw Hwy 101 onto Hwy concentrations, slough WB-9 123°-49.389'W mouth. 200' 105. 105. 105. and marsh habitat. Johnson Slough Take road from Tide Gate Highway 105 to Shorebird and Willapa Bay Airport, PAC0098 Close tide gate. Deploy boom in waterfowl 46°-42.337'N front of tide gate if gate cannot be Stage along Hwy dike access road is off concentrations, slough Exclusion - Keep 123°-49.345'W oil out of slough. 100' closed or if it leaks. 105 airport road. and marsh habitat. WB-10 Helen Davis Memorial Park Mailboat Slough at west end of From Raymond, go (west entrance) South Bend. west on Hwy 101 to Shorebird and PAC0103 Park has boat South Bend. Boat waterfowl 46°-41.150'N concentrations, slough Exclusion - Keep Deploy boom across slough entrance. launch. ramp is at west end of 123°-48.935'W oil out of slough. Must install during high tide. (PAC0145). 1300' and marsh habitat. WB-11 town.

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Proposed Booming and Collection Strategies: Matrices Strategy Response Length of Strategy Status Location Boom **Strategy Implementation Staging Area Site Access Resources Protected** Helen Davis Memorial Park Mailboat Slough at west end of From Raymond, go (middle channel) South Bend. west on Hwy 101 to Shorebird and South Bend. Boat PAC0103 Close tide gate. Deploy boom in Park has boat waterfowl front of tide gate if gate cannot be 46°-41.115'N Exclusion - Keep launch. ramp is at west end of concentrations, slough 123°-48.250'W 100' oil out of slough. closed or if it leaks. (PAC0145). and marsh habitat. WB-12 town. Helen Davis Memorial Park Mailboat Slough at west end of From Raymond, go (north channel) South Bend. west on Hwy 101 to Shorebird and Close tide gate. Deploy boom in PAC0103 Park has boat South Bend. Boat waterfowl front of tide gate if gate cannot be ramp is at west end of concentrations, slough 46°-41.285'N launch. Exclusion - Keep oil out of slough. (PAC0145). 123°-48.885'W 100' closed or if it leaks. and marsh habitat. **WB-13** town Helen Davis Memorial Park at west end of Mailboat Slough From Raymond, go (east entrance) Exclusion -South Bend. west on Hwv 101 to Shorebird and PAC0112 Prevent oil from Park has boat South Bend. Boat waterfowl Deploy boom at an angle across 46°-40.422'N moving into launch. ramp is at west end of concentrations, slough and marsh habitat. **WB-14** 123°-47.589'W slough. 200' slough entrance. (PAC0145). town. Helen Davis Memorial Park Exclusion/ Deploy boom at an 45-60 deg. angle at west end of From Raymond, go Willapa River Collection across river. Use boat launch for South Bend. west on Hwv 101 to Salmon, shorebird and PAC0144 Prevent oil from collection. This strategy can also be Park has boat South Bend. Boat waterfowl used for spills upstream to keep oil 46°-40.283'N moving up or down launch. concentrations, slough ramp is at west end of 123°-48.908'W river. 1000' out of the bay. (PAC0145). and marsh habitat. **WB-15** town.

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Proposed Booming and Collection Strategies: Matrices Strategy Response Length of **Strategy Implementation** Status Location **Strategy** Boom **Staging Area** Site Access **Resources Protected** Helen Davis Memorial Park Potter Slough at west end of From Raymond, go (south entrance) Exclusion -South Bend. west on Hwy 101 to Shorebird and PAC0147 Park has boat South Bend. Boat Prevent oil from waterfowl Deploy boom across slough entrance. launch. 46°-40.955'N moving into ramp is at west end of concentrations, slough 123°-49.269'W slough. 250' Must install at high tide. (PAC0145). and marsh habitat. WB-16 town. Helen Davis Memorial Park Potter Slough at west end of From Raymond, go (north entrance) Exclusion west on Hwy 101 to Shorebird and South Bend. PAC0148 Prevent oil from Park has boat South Bend. Boat waterfowl 46°-41.138'N launch. ramp is at west end of concentrations, slough moving into Deploy boom across slough entrance. 123°-49.269'W Must install at high tide. (PAC0145). and marsh habitat. WB-17 slough. 250' town Stage at north end of Bone Bone River Salmon, shorebird and Exclusion -River Bridge PAC0174 waterfowl Deploy boom at an angle across river Take Hwy 101 south on west side of bridge on Highway 46°-38.936'N Prevent oil from just off Hwy from Raymond to concentrations, slough 300' 101. 123°-55.169'W 101. Bone River. and marsh habitat. WB-18 moving up river. Take Hwy 101 13.5 miles south from Raymond. Turn west Wilson Point Stage near site Shorebird and Marsh PAC0177 Exclusion where BLM onto BLM logging waterfowl 46°-38.536'N Prevent oil from Deploy boom at an angle across logging road road and follow to concentrations, slough moving into marsh. 100' 123°-55.892'W marsh. and marsh habitat. WB-19 marsh entrance near old BLM road. crosses marsh Stage just off Hwy 101 at small oyster Niawiakum Take Hwv 101 14.5 Salmon, shorebird and company on River PAC0185 Exclusion west side of miles south from waterfowl 46°-37.821'N Prevent oil from Deploy boom at an angle across river Hwy, north side Raymond to concentrations, slough 123°-55.475'W moving up river. 800' west of bridge on Highway 101. of river. Niawiakum River. and marsh habitat. WB-20

4-11 March 2003

Proposed Booming and Collection Strategies: Matrices Strategy Response Length of **Strategy Implementation** Status Location Strategy Boom **Staging Area** Site Access **Resources Protected** Take Hwy 101 15.8 miles south from Palix River Stage at boat Salmon, shorebird and PAC0191 Exclusion launch just soutl Raymond to Palix waterfowl Prevent oil from of Palix River 46°-36.752'N Deploy boom at an angle across river River. Site is on north concentrations, slough moving up river. WB-21 123°-55.059'W 1200' west of bridge on Highway 101. bridge. side of river. and marsh habitat. North Nemah Salmon, shorebird and River PAC0239 Exclusion -Deploy boom at an angle across river Stage near Hwy Take Hwy 101 south waterfowl 46°-30.753'N Prevent oil from mouth west of bridge on Highway 101 at N. Nemah from Raymond to N. concentrations, slough 123°-53.581'W 750' 101. Difficult to boom at low water. River Nemah River bridge. and marsh habitat. moving up river. **WB-22** Middle Nemah Stage off Hwy Salmon, shorebird and River PAC0242 Exclusion -101 on dirt road Take Hwy 101 south waterfowl 46°-29.628'N Deploy boom at an angle across river from Raymond to Prevent oil from (Lagergren concentrations, slough west of bridge on Highway 101. 123°-54.096'W and marsh habitat. **WB-23** moving up river. 200' Ranch). Nemah River area. South Nemah Stage off Hwy Salmon, shorebird and River PAC0242 Exclusion -101 on dirt road Take Hwy 101 south waterfowl Deploy boom at an angle across river (Lagergren from Raymond to 46°-29.627'N Prevent oil from concentrations, slough at bridge for Lagergren Ranch. 123°-54.106'W moving up river. 200' Ranch). Nemah River area. and marsh habitat. **WB-24** Naselle River Exclusion/ Deploy boom at an angle across river Stage at old Mill By boat only from the Salmon, shorebird and on east side of bridge at Highway PAC0272 Collection -Ranch site (north Willapa NWR ramp waterfowl 46°-25.952'N concentrations, slough Prevent oil from 101 to collection site on north shore side of Naselle near the south end of **WB-25** 123°-53.945'W moving up river. 2000' at old Mill Ranch. Bridge). Long Island. and marsh habitat. Roaring Creek Exclusion -Stage at old Mill By boat only from the Shorebird and Ranch site (north Willapa NWR ramp Slough Prevent oil from waterfowl 46°-25.709'N moving into Deploy boom at an angle across side of Naselle near the south end of concentrations, slough WB-26 123°-52.457'W slough. 600' slough entrance. Bridge). Long Island. and marsh habitat.

4-12 March 2003

Proposed Booming and Collection Strategies: Matrices 4.3.2 Strategy Response Length of Status Location **Strategy** Boom **Strategy Implementation Staging Area** Site Access **Resources Protected** Take Hwy 101 south from Raymond to Naselle River Bridge. Exclusion -Stage at Shorebird and Ellsworth Slough Prevent oil from Ellsworth Cross bridge and take waterfowl 46°-25.590'N moving into Deploy boom across slough entrance Slough just off first left (Parpala concentrations, slough 123°-53.599'W 600' north of bridge at Parpala Road. of Parpala Road and marsh habitat. slough. Road). **WB-27** Take Hwy 101 south from Raymond to Naselle River Bridge. Salmon, shorebird and Exclusion -Cross bridge and take waterfowl Smith Creek first left (Parpala 46°-25.310'N Prevent oil from Deploy boom across creek mouth Stage along concentrations, slough north of bridge at Parpala Road. Parpala Road. 123°-52.472'W moving up creek. 400' Road). and marsh habitat. **WB-28** Exclusion -National Wildlife Prevent oil from Stage at Willapa By boat only at high Refuge - shorebird Bay NWR Sunshine Point moving into tide from the Willapa and waterfowl Deploy boom at an angle across PAC0261 Naselle River or Headquarters NWR ramp near the concentrations, seal 46°-27.936'N Long Island channel from Sunshine Point to and boat launch south end of Long haulouts, slough and WB-29 123°-56.203'W Slough. 2400' Paradise Point. area (PAC0295) Island. marsh habitat. National Wildlife Stage at Willapa By boat only at high Refuge - shorebird Lewis Slough Exclusion -Deploy boom at an angle across Bay NWR tide from the Willapa and waterfowl PAC0318 Prevent oil from slough entrance. Need high tide to Headquarters NWR ramp near the concentrations, seal 46°-28.535'N boom. Need Refuge permission to and boat launch south end of Long haulouts, slough and moving into 123°-58.328'W 1000' area (PAC0295) marsh habitat WB-30 slough. access site Island National Wildlife Stage at Willapa Refuge - shorebird By boat only at high Exclusion -Deploy boom at an angle across Bay NWR tide from the Willapa and waterfowl Kaffee Slough PAC0315 Prevent oil from slough entrance. Need high tide to Headquarters NWR ramp near the concentrations, seal 46°-28.185'N boom. Need Refuge permission to and boat launch haulouts, slough and moving into south end of Long 123°-57.896'W 450' area (PAC0295) Island. marsh habitat. WB-31 slough. access site.

4-13 March 2003

Proposed Booming and Collection Strategies: Matrices Strategy Response Length of Status Location **Strategy** Boom **Strategy Implementation Staging Area Site Access Resources Protected** National Wildlife Stage at Willapa By boat only at high Refuge - shorebird Baldwin Slough (north entrance) Exclusion -Deploy boom at an angle across Bay NWR tide from the Willapa and waterfowl PAC0311 Prevent oil from north slough entrance. Need high Headquarters NWR ramp near the concentrations, seal 46°-27.036'N moving into tide to boom. Need Refuge and boat launch south end of Long haulouts, slough and 123°-56.945'W 400' permission to access site. area (PAC0295) Island. marsh habitat. slough. **WB-32** National Wildlife Stage at Willapa By boat only at high Baldwin Slough Refuge - shorebird Deploy boom at an angle across Bay NWR (south entrance) Exclusion tide from the Willapa and waterfowl PAC0309 south slough entrance. Need high Prevent oil from Headquarters NWR ramp near the concentrations, seal tide to boom. Need Refuge and boat launch south end of Long haulouts, slough and 46°-26.513'N moving into 123°-56.878'W slough. 400' permission to access site. area (PAC0295) Island. marsh habitat. **WB-33** National Wildlife Long Island Stage at Willapa By boat only at high Refuge - shorebird Slough Exclusion -Bay NWR tide from the Willapa and waterfowl NWR ramp near the PAC0300 Prevent oil from Headquarters concentrations, seal moving into haulouts, slough and 46°-24.731'N Install boom across slough. Need and boat launch south end of Long 123°-56.249'W slough. 900' Refuge permission to access site. WB-34 area (PAC0295) Island. marsh habitat. Lake at Willapa National Take Hwy 101 south Stage at Willapa Wildlife Refuge from Raymond to Headquarters Willapa NWR Block culvert with boom or plywood Bay NWR PAC0295 Discharge from lake will normally Headquarters Headquarters near National Wildlife keep oil out. Could enter only at 46°-24.841'N Exclusion - Keep and boat launch south end of Long Refuge - waterfowl 123°-56.139'W oil out of lake. 100' WB-35 high tide. area (PAC0295) Island. concentrations.

4-14 March 2003

Proposed Booming and Collection Strategies: Matrices Strategy Response Length of Strategy **Strategy Implementation** Status Location Boom **Staging Area** Site Access **Resources Protected** Take Hwy 101 south from Raymond. Deploy boom at Tidal marsh at bridge at mouth of mouth of Bear Exclusion -Bear River. Boat Shorebird and River PAC0355 Prevent oil from access at high tide waterfowl Deploy boom across tidal marsh entrance west of bridge at Highway only from the refuge 46°-22.298'N moving into tidal Stage at concentrations, slough 123°-57.067'W 400' and marsh habitat. **WB-36** marsh. 101. Highway 101. ramp. Take Hwy 101 south from Raymond. Bear River Deploy boom near (main channel) bridge at mouth of National Wildlife Refuge - salmon, PAC0355 Exclusion -Bear River. Boat 46°-22.321'N Prevent oil from Deploy boom across river mouth near Stage at access only from the waterfowl bridge at WB-36. 123°-57.035'W moving up river. 350' Highway 101. refuge ramp. concentrations. **WB-37** Take Hwy 101 south from Raymond. After crossing bridge at National Wildlife Stage at Willapa Bear River (west mouth of Bear River. Refuge - salmon, Bay NWR channel) take Jeldness Road to shorebird and Install boom at an angle across river PAC0361 Exclusion -Headquarters dike access road. waterfowl Prevent oil from entrance. Refuge permission 46°-22.171'N and boat launch Boat access at high concentrations, slough 123°-57.654'W moving up river. 150' required. area (PAC0295) tide only. and marsh habitat. **WB-38** Take Hwy 101 south WBNWR Tide Stage at Willapa from Raymond. After National Wildlife Gate #1 Close tide gate. Deploy boom in front Bay NWR crossing bridge at Refuge - shorebird of tide gate if gate cannot be closed PAC0362 Headquarters mouth of Bear River, and waterfowl or if the gate leaks. Refuge concentrations, slough 46°-22.277'N Exclusion - Keep and boat launch take Jeldness Road to oil out of slough. permission required. dike access road. 123°-57.756'W 100' area (PAC0295) and marsh habitat. WB-39

4-15 March 2003

Proposed Booming and Collection Strategies: Matrices Strategy Response Length of Status Location **Strategy** Boom **Strategy Implementation Staging Area** Site Access **Resources Protected** Take Hwy 101 south from Raymond. After **WBNWR** Tide Stage at Willapa National Wildlife Close tide gate. Deploy boom in front Bay NWR crossing bridge at Refuge - shorebird Gate #2 PAC0362 of tide gate if gate cannot be closed mouth of Bear River, Headquarters and waterfowl 46°-22.465'N or if the gate leaks. Refuge and boat launch Exclusion - Keep take Jeldness Road to concentrations, slough 123°-57.761'W permission required. and marsh habitat. oil out of slough. 100' area (PAC0295) dike access road. WB-40 Take Hwy 101 south WBNWR Tide Stage at Willapa from Raymond. After National Wildlife Close tide gate. Deploy boom infront Bay NWR crossing bridge at Gate #3 Refuge - shorebird of tide gate if gate cannot be closed Headquarters PAC0363 mouth of Bear River. and waterfowl or if the gate leaks. Refuge 46°-22.635'N Exclusion - Keep and boat launch take Jeldness Road to concentrations, slough 100' permission required. WB-41 123°-57.045'W oil out of slough. area (PAC0295) dike access road. and marsh habitat. Take Hwy 101 south Stage at Willapa from Raymond. After National Wildlife Bay NWR crossing bridge at Parker Slough Refuge - shorebird PAC0368 Deploy boom at an angle across Headquarters mouth of Bear River. and waterfowl slough entrance. Need Refuge 46°-22.378'N Exclusion - Keep and boat launch take Jeldness Road to concentrations, slough 900' **WB-42** 124°-00.188'W oil out of slough. permission to access site. area (PAC0295) Parker Slough. and marsh habitat. Parker Slough Stage at Willapa National Wildlife Tide Gate Close tide gate. Deploy boom in front Bay NWR Follow directions for Refuge - shorebird of tide gate if gate cannot be closed Headquarters PAC0368 WB-44, continue on and waterfowl or if the gate leaks. Refuge 46°-22.220'N Exclusion - Keep and boat launch dike access road to concentrations, slough oil out of slough. permission required. 124°-00.384'W 100' area (PAC0295) tide gate. and marsh habitat. **WB-43** Take Hwy 101 to Tarlatt Slough Stage at Willapa Peninsula Highway, Tide Gate Bay NWR go north to dirt road Shorebird and PAC0370 Close tide gate. Deploy boom in front Headquarters 1300' past Pioneer waterfowl 46°-22.202'N of tide gate if gate cannot be closed and boat launch Road, dirt road leads Exclusion - Keep concentrations, slough 124°-01.091'W oil out of slough. 100' or if the gate leaks. area (PAC0295) to tide gate. and marsh habitat. **WB-44**

4-16 March 2003

Proposed Booming and Collection Strategies: Matrices Strategy Response Length of **Strategy Implementation** Status Location Strategy Boom **Staging Area** Site Access **Resources Protected** Boat access only at high tide, use ramp at Willapa Bay NWR Stage at Willapa Headquarters or Exclusion -Bay NWR Nahcotta. Need Shorebird and Tarlatt Slough PAC0369 Prevent oil from Headquarters Willapa NWR waterfowl 46°-22.410'N and boat launch permission to access concentrations, slough moving into Deploy boom at an angle across 124°-00.532'W 480' area (PAC0295) site and marsh habitat. **WB-45** slough. slough entrance. Boat access only at high tide, use ramp at Willapa Bay NWR Stage at Willapa Headquarters or Exclusion -Bay NWR Nahcotta. Need Giles Slough Shorebird and PAC0375 Prevent oil from Headquarters Willapa NWR waterfowl 46°-23.505'N moving into Deploy boom at an angle across and boat launch permission to access concentrations, slough 124°-00.965'W and marsh habitat. 900' slough entrance. area (PAC0295) **WB-46** slough. site. Boat access only at Grassy Island Stage at high tide, use ramp at National Wildlife (south) Refuge - shorebird Nahcotta Marina Nahcotta or Tokeland PAC0438 (PAC0403). Need Willapa NWR Exclusion - Keep and waterfowl oil from moving 46°-37.556'N Deploy boom at south end of Grassy west of Ocean permission to access concentrations, marsh **WB-47** 124°-02.961'W into marsh area. 1700' Island, high tide only. Park. site. habitat. Boat access only at Stage at high tide, use ramp at National Wildlife Deploy boom at north end of Grassy Nahcotta Marina Refuge - shorebird Grassy Island Nahcotta or Tokeland Need Willapa NWR Island, high tide only. Entrance to (north) PAC0438 Exclusion - Keep (PAC0403), and waterfowl 46°-38.251'N oil from moving marsh is variable and may be blocked west of Ocean permission to access concentrations. **WB-48** 124°-02.765'W into marsh area. 1000' with sand. Park. site. marshes. Boat access only at high tide, use ramp at Stage at Nahcotta Marina Nahcotta or Tokeland Gunpowder Sands Deflection -Angle boom southeast from east side (PAC0403). Need Willapa NWR 46°-38.359'N Deflect oil into of Gunpowder Sands to deflect oil west of Ocean permission to access Shorebirds and 2000' WB-49 124°-0.996'W main channel. away. Park. site. waterfowl.

4-17 March 2003

5. Shoreline Information

5.1. Shoreline Types and Sensitivity

The type of shoreline, degree of exposure to waves and currents, and biological sensitivity are the main criteria for selecting appropriate treatment techniques. Each shoreline type has particular properties (including vegetation types) which facilitate or resist the penetration and persistence of oil. Areas of comparatively uniform sediment type and grain size experience a deeper penetration of oil. Grain size definitions are:

Mud <0.0625 mm
Fine Sand 0.0625 - 2 mm
Medium to Coarse Sand 2 - 4 mm
Pebble/Cobble 4 - 256 mm

Persistence of oil in a particular area is directly related to the intensity of wave action, tides, and currents. Based on numerous oil spill studies of shoreline characteristics, treatment, and oil impact, the matrices in Chapter 5 were formulated following the basic prototype of the Environmental Sensitivity Index Atlas.

The environmental sensitivity index (ESI) system ranks coastal environments on a scale of 1-10 or 11 (less sensitive to more sensitive) with respect to oil spill sensitivity and potential biological injury. ESI is being used for mapping extensive areas of the coastline of the U.S. Generally speaking, areas exposed to high levels of physical energy, such as wave action and tidal currents, rank low on the scale while sheltered areas have the highest ranking. The shoreline types used in this manual are a combination of the two similar systems used for the Delaware/Pennsylvania/New Jersey ESI Atlas, and the Maryland and Virginia atlases. The numbering system for the Countermeasure Manual Shoreline Types does not correspond exactly to either atlas; however, the corresponding shoreline types can be identified easily from the ESI maps and reassigned the appropriate number (after field verification.) The shoreline ranking system provides a useful first step in the design of contingency plans because it identifies the priority areas that require maximum effort for protection and cleanup. Strike teams and contractors with this document can focus their activities on environmental priorities, particularly during the first few hours and days of the spill.⁸

5-1

March15, 1994

⁸Regional Response Team III. Draft, *Shoreline Countermeasures Manual*. (Department of the Interior, March 22,1991).

5.3 Shoreline Countermeasure Matrices

The matrices included here show which shoreline countermeasure techniques have been considered for the fourteen shoreline types described in Chapter 2 of the "Shoreline Countermeasures Manual & Matrices", Northwest Area Plan, Chapter 9650, Page 9-37. Four matrices have been constructed for the major categories of oil (heavy, medium, light, very light).

Countermeasure methods are described in Chapters 3 and 4 of the manual. Countermeasures in Chapter 3 are traditional or conventional techniques that the OSC can use without any additional concurrence. However, the cutting of vegetation countermeasure should be used only during specific seasonal windows under specific conditions and with landowner approval. Countermeasures in Chapter 4 are described under a separate section called "Shoreline Countermeasure Methods Using Alternative Technology" may be useful in certain situations. These methods are considered more experimental and controversial in their application and potential impacts and require more formal review and consultation before implementing. The exact requirements are spelled out in the National Contingency Plan and the Northwest Area Plan. The Shoreline Countermeasures Matrices are a particularly dynamic component of the manual and should continue to be revised as the existing techniques are used and evaluated, and as both old and new techniques are refined.

Each matrix has a written explanation of how it is to be used as a countermeasure advisability matrix. The matrices are only a general guide for removing oil from shoreline substrates. They must be used in conjunction with the entire "Shoreline Countermeasures Manual" plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the State OSC operating with the FOSC's authorization has the responsibility for and authority to determine which countermeasure(s) are appropriate for the various situations encountered.

Selection of countermeasure techniques to be used in each spill is based upon the degree of oil contamination, shoreline types, and the presence of sensitive resources. Extremely sensitive areas are generally limited to manual cleanup methods. It is important to note that the primary goal of countermeasure implementation is the removal of oil from the shoreline with no further injury or destruction to the environment. The three categories of guidance used in the matrices are defined as follows:

R	Recommended	May be the preferred method that best achieves the goal of minimizing destruction or injury to the environment
C	Conditional	Viable and possibly useful but may result in limited adverse effects to the environment
	Shaded	Not applicable or not generally recommended.

Heavy Oil (Heavy Crude Oils, Intermediate Fuel Oils, Bunker C & Heavily Weathered Medium Crudes)

- Heavy oils with little or no evaporation or dissolution
- Water-soluble fraction likely to be <10ppm
- Heavy contamination of intertidal areas likely
- Severe impacts to waterfowl and fur-bearing mammals (coating and ingestion)
- Long-term contamination to sediments possible
- Weathers very slowly
- Dispersion seldom effective
- Shoreline cleanup difficult under all conditions

SHORELINE TYPES CODES

1- Exposed rock shores and vertical, hard man-made structure (e.g. seawalls)

2 - Exposed wave-cut platforms

3 - Fine to medium grained sand beaches & steep unvegetated river banks

4 - Course grained sand beaches

5 - Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material

6A - Gravel beaches - pebbles to cobble

6B - Gravel beaches - cobbles to boulders

6C - Exposed rip rap

7 - Exposed tidal flat

8A- Sheltered vertical rock shores and vertical, hard man-made structures (e.g. seawalls, docks, bulkheads)

8B - Sheltered rubble slope

9A - Sheltered sand and mud flats

9B - Sheltered vegetated low bank

10 - Marshes

SHORELINE TYPES

	SHORELINE TYPES													
COUNTERMEASURES	1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	С	С	С	С	С	С	С	C	R	C	С	R	С	R
Manual removal of oil	C	R	R	R	R	C	C	C		R	R		C	С
Passive collection of oil	R	R	R	R	R	R	R	R	С	R	R	С	R	R
Oiled debris removal	С	R	R	R	R	R	R	R	C	R	R	С	R	C
Trenching/recovery wells			С	С	С									
Oiled sediment removal			C	C	C	C		C					C	
Ambient water flooding (Deluge)			С	C	С	R	R	R		R	R		С	С
Amb water flush <50 psi	С	С			С	R	C	R		С	С		C	C
Amb water flush <100 psi	C	C					C	C		С	C			
Warm water flush <90°F	С						С	C		С				
Hot water flush >90°F	С									С				
Vacuum removal of oil	C	С	С	C	С	С	C	C		С	C		C	С
Sediment reworking			С	C	C	C								
Sediment Removal- cleaning-replacement			С	С	С	С		С						
Cutting oiled vegetation							C	C		C	C		C	C
ALTERNATIVE METHODS*														
In-situ burning on shore														
Chemical stabilization, protection, cleaning														
Nutrient enhancement			C	C	C	C	C	C						C
Microbial addition														

- R Recommend May be Preferred Alternative
- C Conditional (Refer to NW Shoreline Countermeasures Manual)
 - Shaded areas are Not Applicable or Not Generally Recommened
- * Follow approved process defined in NCP and NW Area Plan

This countermeasure advisability matrix is only a general guide for removal of oil from shoreline substrates. It must be used in conjunction with the entire Shoreline Countermeasures Manual plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the state OSC operating with the FOSC's authorization has the responsibility for and the authority to determine which countermeasure(s) are appropriate for various situations encountered. Selection of countermeasures is based on the degree of oil contamination, the shoreline type, and the presence of sensitive resources.

Medium Oil (Most Crude Oils & Some Heavily Weathered Light Crudes)

- About 1/3 will evaporate within 24 hours
- Maximum water-soluble fraction is 10-100ppm
- Oil contamination of intertidal areas can be severe and long-term
- · Impact to waterfowl and fur-bearing mammals can be severe
- Chemical dispersion is an option within 1-2 days
- Cleanup most effective if conducted quickly

SHORELINE TYPES CODES

1- Exposed rock shores and vertical, hard man-made 6B - Gravel beaches - cobbles to boulders structure (e.g. seawalls) 6C - Exposed rip rap 2 - Exposed wave-cut platforms 7 - Exposed tidal flat 3 - Fine to medium grained sand beaches & steep 8A- Sheltered vertical rock shores and vertical, hard man-made structures (e.g. seawalls, docks, unvegetated river banks 4 - Course grained sand beaches bulkheads) 5 - Mixed sand and gravel beaches, including artificial 8B - Sheltered rubble slope

fill containing a range of grain size and material 9A - Sheltered sand and mud flats 6A - Gravel beaches - pebbles to cobble 9B - Sheltered vegetated low bank

10 - Marshes

SHORELINE TYPES

	SHORELINE TYPES													
COUNTERMEASURES	1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	С	С	С	С	С	С	С	C	R	С	С	R	С	R
Manual removal of oil	C	R	R	R	R	C	C	C		R	R		C	С
Passive collection of oil	R	R	R	R	R	R	R	R	С	R	R	R	R	R
Oiled debris removal	C	R	R	R	R	R	R	R	C	R	R	C	R	С
Trenching/recovery wells			С	С	С									
Oiled sediment removal			С	C	C	С							С	
Ambient water flooding (Deluge)			С	С	С	R	R	R		R	R		С	C
Amb water flush <50 psi	С	С			С	R	C	R		R	R		C	С
Amb water flush <100 psi	С	С					С	C		C				
Warm water flush <90°F	C						С	С		C				
Hot water flush >90°F	C									C				
Vacuum removal of oil	C	С	R	R		С	R	R		C	C		С	С
Sediment reworking			С	С	С	С								
Sediment Removal- cleaning-replacement			С	С	С	С		С			С			
Cutting oiled vegetation							C	C		C	C		C	C
ALTERNATIVE METHODS*														
In-situ burning on shore														
Chemical stabilization, protection, cleaning														
Nutrient enhancement			C	C	C	C	C	C			C			C
Microbial addition														

R Recommend - May be Preferred Alternative

Conditional (Refer to NW Shoreline Countermeasures Manual) \mathbf{C}

Shaded areas are Not Applicable or Not Generally Recommened Follow approved process defined in NCP and NW Area Plan

This countermeasure advisability matrix is only a general guide for removal of oil from shoreline substrates. It must be used in conjunction with the entire Shoreline Countermeasures Manual plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the state OSC operating with the FOSC's authorization has the responsibility for and the authority to determine which countermeasure(s) are appropriate for various situations encountered. Selection of countermeasures is based on the degree of oil contamination, the shoreline type, and the presence of sensitive resources.

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Light Oil (Diesel, No 2 Fuel Oils, Light Crudes)

- Moderately volatile; will leave residue (up to 1/3 of spilled amount)
- Moderate concentrations of toxic (soluble) compounds
- · Long-term contamination of intertidal resources possible
- Potential for subtidal impacts (dissolution, mixing, sorption onto suspended sediments)
- No dispersion necessary
- Cleanup can be very effective

SHORELINE TYPES CODES

1- Exposed rock shores and vertical, hard man-made	
structure (e.g. seawalls)	

- 2 Exposed wave-cut platforms
- 3 Fine to medium grained sand beaches & steep unvegetated river banks
- 4 Course grained sand beaches
- 5 Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material
- 6A Gravel beaches pebbles to cobble

6B - Gravel beaches - cobbles to boulders 6C - Exposed rip rap

7 - Exposed tidal flat

8A- Sheltered vertical rock shores and vertical, hard man-made structures (e.g. seawalls, docks,

bulkheads)

8B - Sheltered rubble slope

9A - Sheltered sand and mud flats

9B - Sheltered vegetated low bank

10 - Marshes

SHORELINE TYPES

	SHORELINE TYPES													
COUNTERMEASURES	1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	R	R	С	С	С	С	С	С	R	C	С	R	С	R
Manual removal of oil			С	C	С	С	С	С		R	R		C	
Passive collection of oil	C	R	R	R	R	R	R	R	С	R	R	C	R	R
Oiled debris removal	C	С	R	R	R	R	R	R	C	R	R	C	C	C
Trenching/recovery wells			С	С	С									
Oiled sediment removal			С	C	С	С								
Ambient water flooding (Deluge)			С	С	С	R	R	R			С			C
Amb water flush <50 psi		С			С	C	C	C		R	C			C
Amb water flush <100 psi														
Warm water flush <90°F														
Hot water flush >90°F														
Vacuum removal of oil							C	С						С
Sediment reworking			С	С	С	C								
Sediment Removal- cleaning-replacement			С	С	С									
Cutting oiled vegetation							С	С		C	С		C	С
ALTERNATIVE METHODS*														
In-situ burning of shore														
Chemical stabilization, protection, cleaning														
Nutrient enhancement			C	C	C	C	C	C						C
Microbial addition														

- R Recommend - May be Preferred Alternative
- C Conditional (Refer to NW Shoreline Countermeasures Manual)
- Shaded areas are Not Applicable or Not Generally Recommened

Follow approved process defined in NCP and NW Area Plan

This countermeasure advisability matrix is only a general guide for removal of oil from shoreline substrates. It must be used in conjunction with the entire Shoreline Countermeasures Manual plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the state OSC operating with the FOSC's authorization has the responsibility for and the authority to determine which countermeasure(s) are appropriate for various situations encountered. Selection of countermeasures is based on the degree of oil contamination, the shoreline type, and the presence of sensitive resources.

> 5-12 March 2003

Very Light Oil (Jet fuels, Gasoline)

- Highly volatile (should all evaporate within 1-2 days)
- High concentration of toxic (soluble) compounds
- Result: Localized, severe impacts to water column and intertidal resources
- · Duration of impact is a function of the resource recovery rate
- No dispersion necessary

SHORELINE TYPES CODES

1	1- Exposed rock shores and vertical, hard man-made
	structure (e.g. seawalls)

- 2 Exposed wave-cut platforms
- 3 Fine to medium grained sand beaches & steep unvegetated river banks
- 4 Course grained sand beaches
- 5 Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material
- 6A Gravel beaches pebbles to cobble

6B - Gravel beaches - cobbles to boulders

6C - Exposed rip rap

7 - Exposed tidal flat

8A- Sheltered vertical rock shores and vertical, hard man-made structures (e.g. seawalls, docks,

SHOREI INF TYPES

8B - Sheltered rubble slope

9A - Sheltered sand and mud flats

9B - Sheltered vegetated low bank

10 - Marshes

	SHORELINE TYPES													
COUNTERMEASURES	1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Manual removal of oil														
Passive collection of oil			C	С	С	С	С	С						
Oiled debris removal	С	С	C	C	C	С	С	C	C	С	C	С	С	С
Trenching/recovery wells			С	С	С									
Oiled sediment removal														
Ambient water flooding (Deluge)														С
Amb water flush <50 psi														
Amb water flush <100 psi														
Warm water flush <90°F														
Hot water flush >90°F														
Vacuum removal of oil														
Sediment reworking			С	С	С	C								
Sediment Removal- cleaning-replacement														
Cutting oiled vegetation														
ALTERNATIVE METHODS*														
In-situ burning on shore														
Chemical stabilization, protection,														

R Recommend - May be Preferred Alternative

cleaning

Nutrient enhancement Microbial addition

- C Conditional (Refer to NW Shoreline Countermeasures Manual)
- Shaded areas are Not Applicable or Not Generally Recommened
- * Follow approved process defined in NCP and NW Area Plan

This countermeasure advisability matrix is only a general guide for removal of oil from shoreline substrates. It must be used in conjunction with the entire Shoreline Countermeasures Manual plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the state OSC operating with the FOSC's authorization has the responsibility for and the authority to determine which countermeasure(s) are appropriate for various situations encountered. Selection of countermeasures is based on the degree of oil contamination, the shoreline type, and the presence of sensitive resources.

Purpose of Chapter 6

The information presented in this chapter highlights some of the more significant environmentally sensitive areas within the GRP region that could be impacted as a result of an oil spill. Consistent with the overall purpose of the GRP's, this information is only intended to provide a level of detail required during the initial phase of spill response. During an actual event, additional resource information will be available from the resource trustee agencies supporting the Environmental Unit in the Planning Section. Specific resource concerns for areas that already have designated protection strategies in Chapter 4 of the GRP may be found in the "Resources Protected" column in the matrix describing the individual strategies.

The information provided in Chapter 6 is intended for use in:

- o Preparing an initial ICS 232 form (Resources-at-Risk summary) for Incident Command
- o Identifying those sites where it may be necessary to implement Flight Restriction Zones in order to prevent disturbance/injury to sensitive wildlife species.
- o Identifying sensitive shoreline habitats to assist SCAT teams in their initial assessments and to help personnel in the Environmental Unit in developing appropriate cleanup strategies.

Chapter 6 consists of two sets of maps and tables - one for wildlife and the other for fish, shellfish and selected sensitive marine habitats. These data are presented separately, both for ease of reading and because each of the two data sets has slightly different applications within the context of spill response.

The wildlife maps and tables present information on the location and seasonal sensitivity of key wildlife resources. Types of data included here are concentration areas for waterfowl, marine birds and shorebirds; seabird colonies; nesting areas for sensitive species such as eagles, herons and falcons; and marine mammal haulout sites. This information is intended for the rapid identification of areas where significant wildlife oiling impacts could be anticipated and to denote areas where flight restriction zones may be required to protect sensitive wildlife. Each site depicted on these maps is identified by a unique number in order to facilitate the process of communicating Flight Restriction Zone recommendations to the Operations Section in ICS. The tables accompanying the wildlife maps present information on the season(s) during which sites may be particularly sensitive to disturbance.

The fish/shellfish/marine habitat maps present general information on the location of baitfish spawning beaches, herring spawning areas, streams used by anadromous salmonids, hardshell clam concentrations, and kelp and eelgrass beds. This information will be most useful to personnel involved in assessing initial risks to fish and shellfish resources and to those conducting initial beach reconnaissance, pending availability of more detailed resource information and the formation of SCAT teams.

Because the operational uses of this information differ from those of the wildlife data, individual site identification numbers have not been assigned. Tables associated with these maps will identify the seasonal sensitivity of each resource. In addition, notes accompanying each table will provide information on the general distribution and seasonal sensitivity of those resources that are not mapped but may occur anywhere in the GRP region (ex. juvenile salmonids in shallow nearshore waters).

6.0 Sensitive Resource Description

6.1 Fisheries

A series of maps representing the current knowledge of some of Washington Department of Fisheries' trust resources appear in Appendix A. The maps focus on nearshore resources of high commercial, recreational, or ecological value.

Willapa Bay contains a wide variety of fisheries resources. These include Pacific salmon; baitfish resources such as Pacific Herring, and surf smelt; shellfish resources such as native oysters; Pacific oysters; crabs; cockle clams; Eastern clams; Manila; Horse clams; and other species of aquatic life.¹¹

Adult and juvenile life stages of a number of ecologically and economically important species including salmon, marine fish, baitfish, and shellfish as well as the plankton community are considered to be ubiquitous in distribution and therefore, are not displayed on maps.

Additional information provided in Appendix A includes habitat association and timing tables. These tables display information on temporal and spatial distribution, preferred habitat, and relative abundance of various life history stages.¹²

6.2 Wildlife

Marine Mammals

Both Grays Harbor and Willapa Bay play a significant role in the life history of our state's harbor seal population. Both estuaries are used year—round as resting and feeding areas. Two features make these estuaries unique: the presence of numerous haulout sites scattered among the islands and tidal flats, and an abundant year—round food supply. Seals are most abundant here during spring and summer months; roughly April through September. During this period of peak abundance, these estuaries account for almost 40% of Washington's statewide population. Analysis of 1992 aerial survey data yielded a peak population estimate of over 11,000 seals (including over 2400 pups) for the two estuaries combined.

Pupping occurs from April through July with the peak occurring in late May and early June. Maximum numbers of haulout sites are occupied during this season as females move to peripheral areas throughout the estuaries to give birth and nurse their young. Closely associated mother/pup pairs may still be present through early August. During the period from July to September seal numbers in the estuaries remain high as adults go through their annual molt and recently weaned pups learn to feed on their own. Seal numbers begin to decrease in September as many animals begin to leave the estuaries and migrate to the Columbia River where they will overwinter.

The only other marine mammal which commonly uses these estuaries is the gray whale. This species is most frequently found just outside the mouths of the estuaries during the northward spring migration which lasts from March through May. During this period, it is common for some individuals to enter the mouths of both estuaries to feed.¹³

Shorebirds, Waterfowl, and Raptors

Grays Harbor and Willapa Bay play a critical role for migrating and wintering shorebirds, waterfowl and raptors. Over a million shorebirds stop in the bays to rest and feed each spring before continuing their migration from wintering grounds as far south as South America to breeding grounds in the Arctic. Bird numbers peak during the second half of April as western sandpipers and numerous other species pass through on their way north. Shorebirds are virtually absent from the estuaries in June, but quickly increase as they begin their southward migration from the breeding grounds. While most shorebirds pass through to points farther south, thousands of dunlin and black-bellied plovers spend the winter in the estuaries.

More than twenty-five species of waterfowl occur in these estuaries including brant, pintail and American wigeon. Eelgrass beds play a crucial role in supporting hundreds of thousands of ducks and geese from mid-September through mid-May.

Grays Harbor and Willapa Bay are used by many other species for nesting and feeding including bald eagles, double-crested cormorants, great blue herons, Caspian terns and western gulls. Other species that breed elsewhere but spend a portion of their life in the estuaries include brown pelicans, common terns, marbled murrelets, common murres, rhinoceros auklets and several species of loons, grebes and gulls.¹⁴

6.3 Archeological Sites

Geographic Site Locations

- (1) East side of Long Beach Peninsula from Oysterville to point west of Jensen Point, Long Island
- (2) Nemah River mouth
- (3) Seal Slough
- (4) Sunshine Point
- (5) Stanley Peninsula
- (6) Beachside, Sandy Point to Bay Center
- (7) East side of Palix River mouth
- (8) Both sides of Bone River mouth

General Resources:

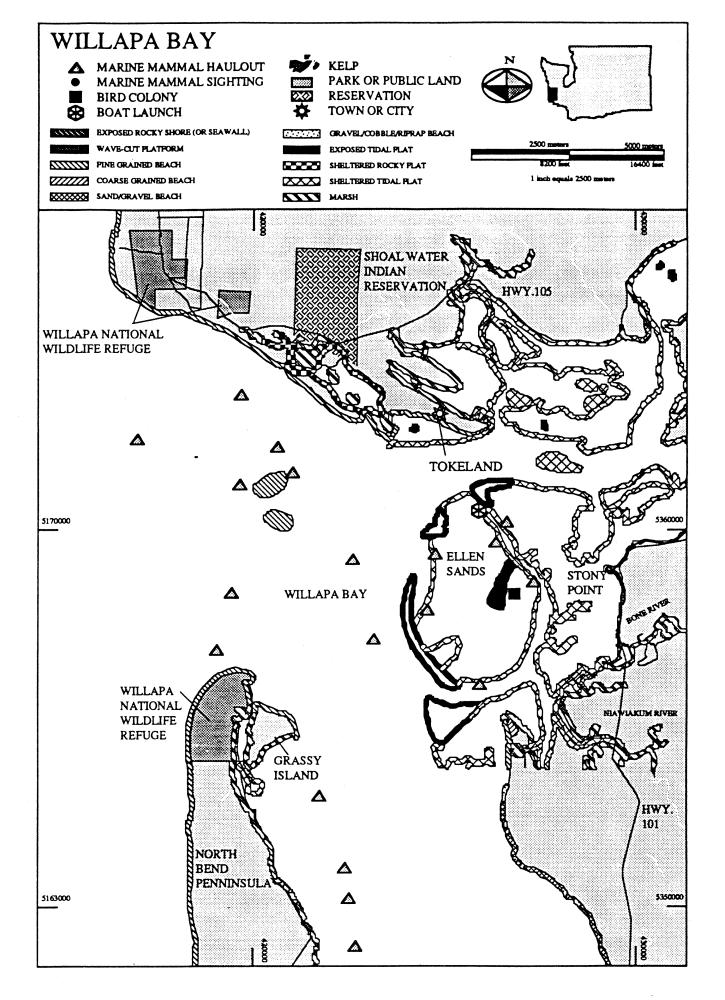
Potential archaeological; village sites; shell middens; camp sites; food gathering sites. Remains of fish weirs in intertidal zone and in deeper water.

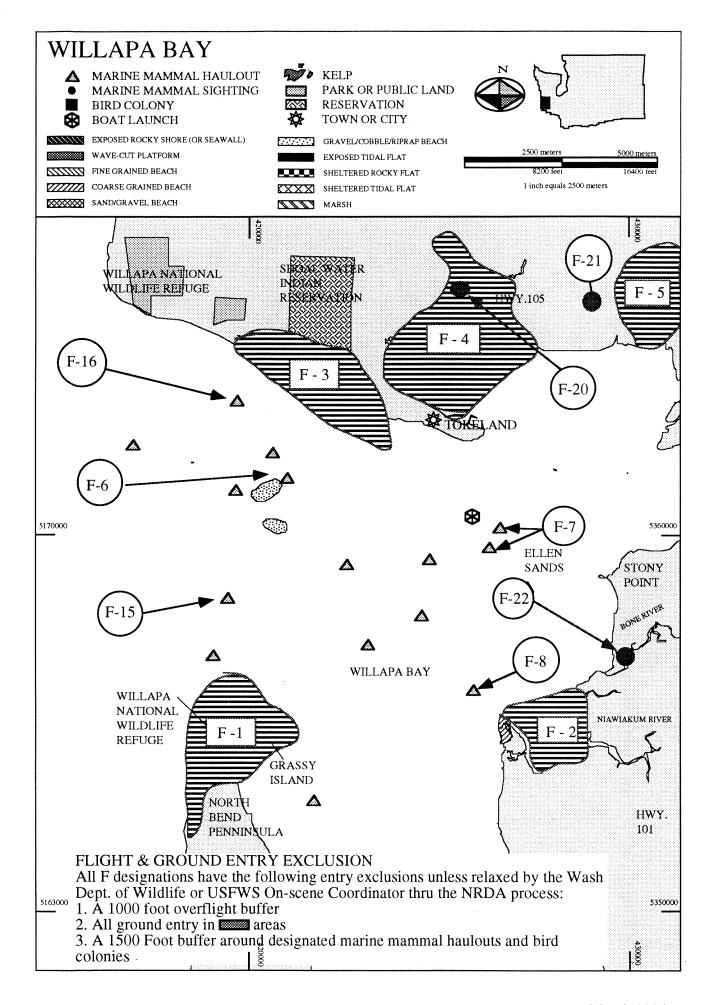
Seasonal Sensitivity:

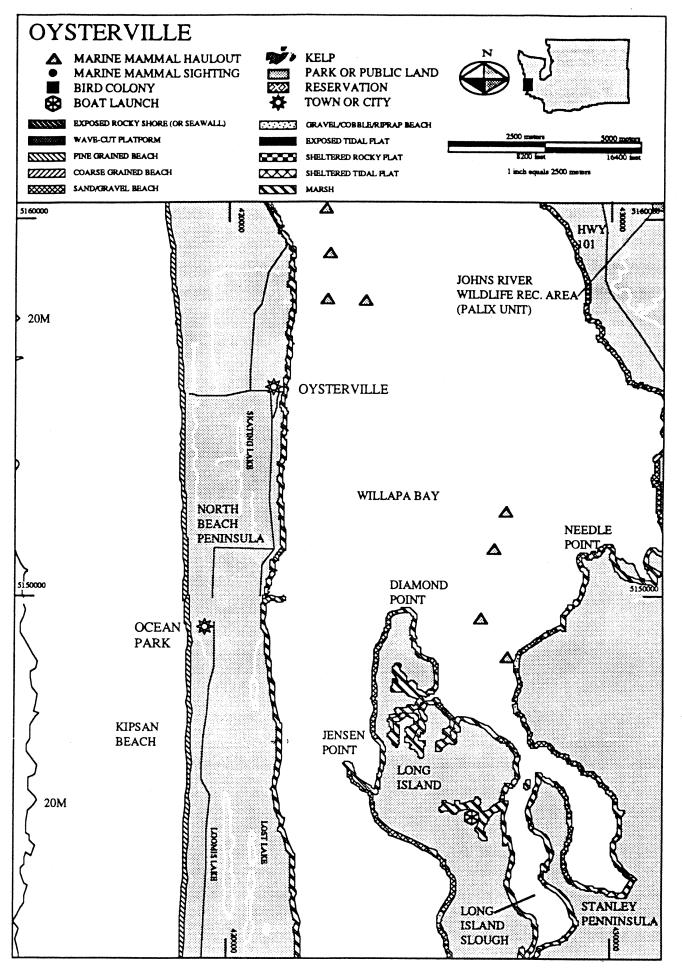
Sensitive at all times of the year.

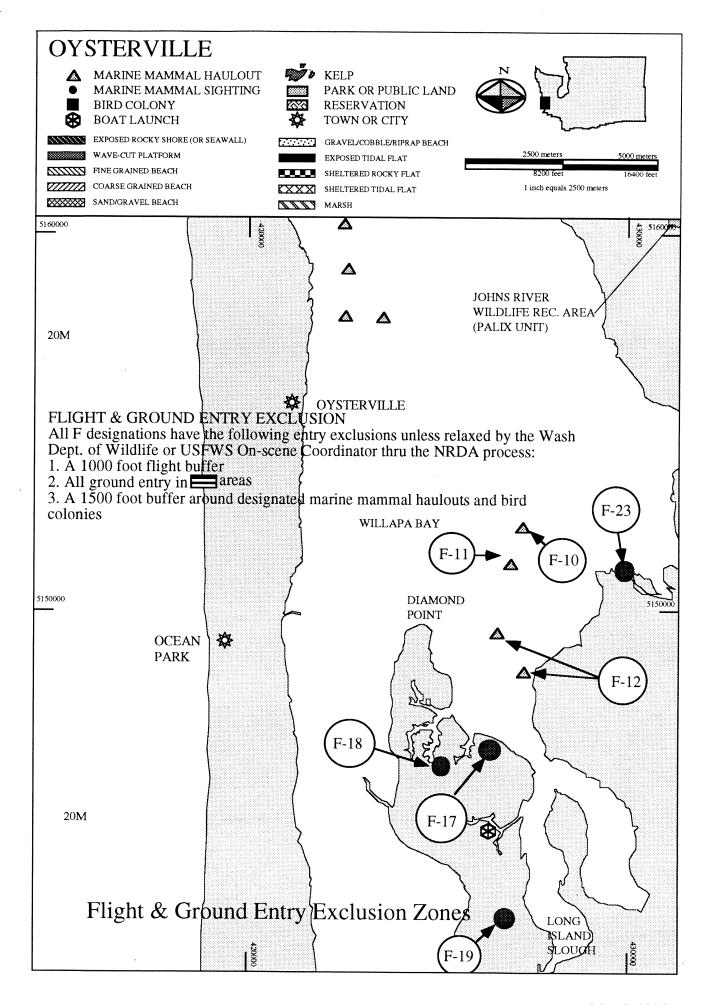
Recommendations:

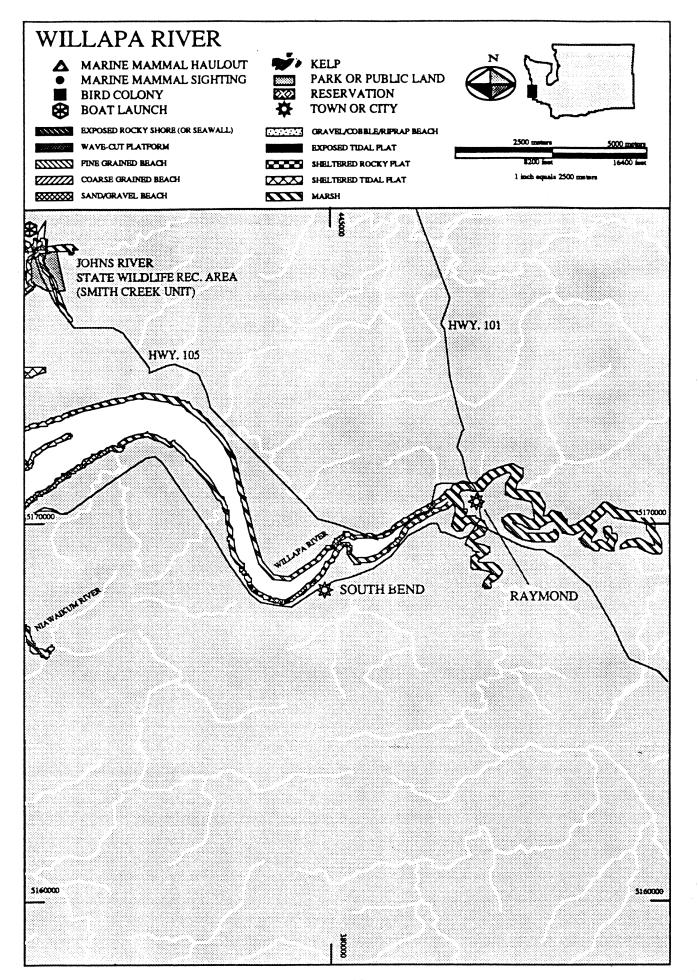
Areas identified on overlay (see map display) are generalized sensitive areas; it is theorized that archeological sites are likely to be located at mouths of freshwater streams or adjacent upland areas. Cleanup crews should stay on established access routes (roads, trails, etc.) and avoid disturbance to adjacent areas. Fish weirs in Grays Harbor are very sensitive and booming or skimming operations should avoid if possible or use extreme care in these areas. Recommend Office of Archeology and Historic Preservation staff or cultural resource person on board if necessary.¹⁵











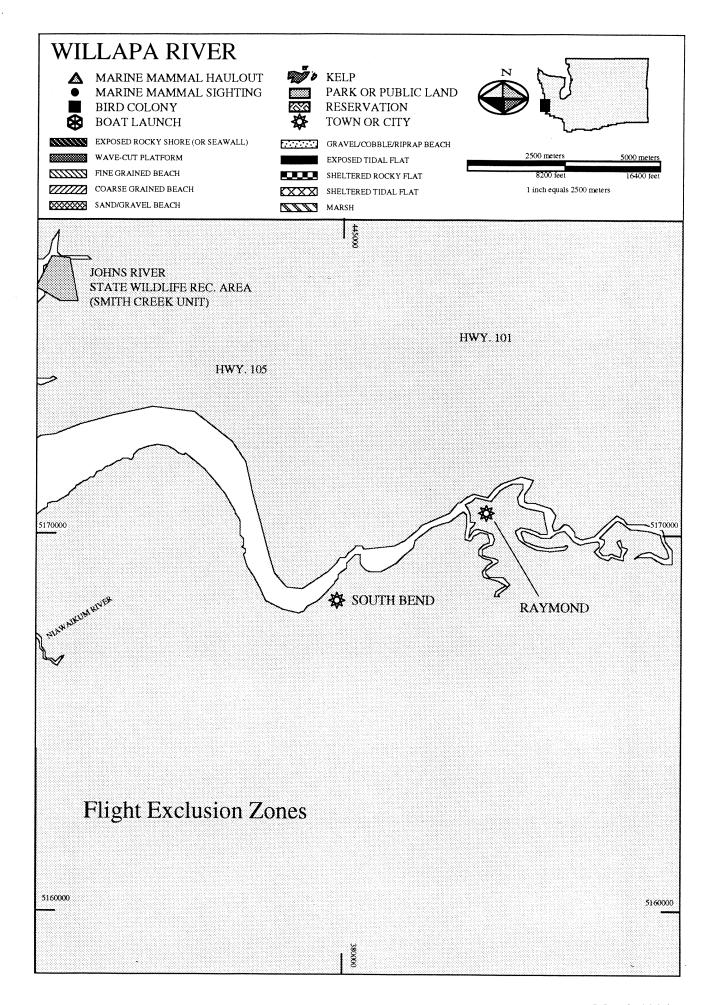


Table 4-2 Flight Exclusion Zones for Willapa Bay

Zone #	Location	Resource	Season	Comments
F-1	Willapa Bay Refuge	Shorebird and waterfowl concentrations	winter/ spring/ fall	nesting and feeding
		Snowy Plover	spring/ summer/ fall	nesting - threatened
		Sensitive Nesting Area	all year	feeding
F-2	Mouth of the Palix River	Shorebird and waterfowl concentrations	winter/ spring/ fall	resting, feeding
F-3	North Cove	Shorebird and waterfowl concentrations	winter/ spring/ fall	resting, feeding
F-4	Inside Toke Point, Kindred and Teal Duck Sloughs	Shorebird and waterfowl concentrations	winter/ spring/ fall	resting and feeding
F-5	North River Mouth, area Northeast of Hawks Pt.	Shorebird and waterfowl concentrations	winter/ spring/ fall	resting, feeding
F-6	Island in the Mouth of Willapa Bay	Haul out - harbor seal only	May - August	exclusion when present
F-7	Pine Island Channel	Haul out - harbor seal only	May - August	exclusion when present
F-8	Deadheads, Bay Center Channel	Haul out - harbor seal only	May - August	exclusion when present
F-9	Southwest of Hawks Pt.	Haul out - harbor seal only	May - August	exclusion when present
F-10	Northeast of Diamond Point	Haul out - harbor seal only	May - August	exclusion when present
F-11	Southeast of Diamond Point	Haul out - harbor seal only	May - August	exclusion when present
F-12	Approx. 2,000 yards east of Diamond Point	Haul out - harbor seal only	May - August	exclusion when present
F-13	West side of Shoalwater Bay	Haul out - harbor seal only	May - August	exclusion when present
F-14	Middle of Shoalwater Bay, end of Nahcotta Channel	Haul out - harbor seal only	May - August	exclusion when present

Table 4-2 Flight Exclusion Zones for Willapa Bay, continued

Zone #	Location	Resource	Season	Comments
F-15	Leadbetter Channel	Haul out - harbor seal only	May - August	exclusion when present
F-16	Southwest of North Cove	Haul out - harbor seal only	May - August	exclusion when present
F-17	Northwest of Paradise Point, Long Island	Sensitive Nesting Area	Winter conc., Feb - July nesting	nesting
F-18	South of Kaffee Slough, Long Island	Sensitive Nesting Area	February - August	nesting
F-19	Southeast end of Long Island	Sensitive Nesting Area	February - August	nesting
F-20	South of Norris Slough	Sensitive Nesting Area	February - August	nesting
F-21	Northwest of Hawks Point	Sensitive Nesting Area	February - August	nesting
F-22	Bone River Mouth	Sensitive Nesting Area	February - August	nesting
F-23	Lynn Point	Sensitive Nesting Area	February - August	nesting

ALL ZONES IDENTIFIED ARE SUBJECT TO 1200' FLIGHT EXCLUSION AND 1000'-1500' ACCESS EXCLUSION.

Spring:

March/April/May

Fall: August/September/October/November

Summer: June/July

Winter: December/January/February

IF IT IS NECESSARY TO ENTER A WILDLIFE ZONE, CONTACT THE WASHINGTON DEPARTMENT OF WILDLIFE.

7.0 Logistical Information

The following list was compiled at the Outer Coast Geographic Response Plan Workshop, held in Montesano, Washington on February 23, 1993. Areas of information include: command posts; communications; equipment cache locations; inventory of local support equipment; air support; access points to the Bay; and other pertinent logistical support.

Subject	Name	Characteristics	Contact	Phone #
Command Posts	Camp Rilea			
	USCG Station			
	Willapa Bay (old)			
	Long Beach Fire Hall			
	(Heli access)			
	USCG Station Cape			
	Disappointment			
	Port of Ilwaco Marina			
	Yard			
	Surfside Inn			
	KOA Chinook			
	County EOC (South			
	Bend)			
	Port of Ilwaco			
	Port of Willapa			
	(Raymond)			
	National Guard Unit			
	- Long Beach			
	Golf Course/			
	Breakers Motel			
	Ocean Spray Plant			
Communications	US West Cellular,			
	spotty in south			
	US Cellular			
	Ham Operators	VHF, HF,		
		Sideband		
	Clean Sound UHF	454,000 Mhz,		
	Repeater	Naselle Ridge		
	FEMA Ridge			
Equipment Cache	WDOE Equipment			
Locations	Database			
	Asoria-Riedel	2000' 12x18 Hard		
		Boom		
	Weyerhauser	1-2,000' Hard		
		Boom		

7.0 EQUIPMENT, CONTINUED

Inventory of Local	See Equipment Forms			
Support Equipment	1			
	Fire Trucks			
	Vacuum Truck			
	Evergreen Septic		,	
	Turner & Son	Fuel Tanks		
Helicopter	Port of Ilwaco			
Support/Air Support				
	Westport	Complete in June		
	, •	93		
,	Willapa Bay/South	1600' strip		
	Bend	•		
	Heliport Cosmopolis	Jet A fuel (Thom		
	Weyerhauser Saw	Davis will work		
	Mill	with Wey on Fuel)		
	Bowerman Field	C-130's		
	Astoria	C-130s		
	Clipson Airfield Helo	small fixed wing,		
	•	no facilities		
Access Points to	Neah Walka			
Willapa Bay				
	Port of Ilwaco			
	Nahcotta	·		
	Tokeland			
	South Bend			
	Port of Willapa			
	Port Dock -			
	Raymond			
	Grays River next to			
	ferry			
	Harold's Place (oyster			
	facility)			
	Bay Center			
Access Points to	Hwy 101/Palix RV			
Willapa Bay	Junction			
Property Access				
Information and				
Contacts				

7.0 EQUIPMENT, CONTINUED

Staging Areas	Raymond South Bend Coastline area		
	Port of Ilwaco		
	Nahcotta		
	Tokeland		<u> </u>
	South Bend		
	Port of Willapa	Microsoft and the state of the	
	Fort of Willapa		
Recreational	Mamarial through		
Activities	Memorial through Labor Day, heavy		
Activities	tourist season		
	Summer – Kite		
	Festival, Longbeach		
	Peninsula		
	October – Cranberry		
	Festival		
	Buoy 10 – August,		
	Salmon fishing		
Key Local Elected	County		
Officials	Commissioners		
Officials	Long Beach		
	Administrator		
	Mayor of Ilwaco –		
	Toby Baird		
	Jolene Unsoeld		
			
	Sid Snyder – State		
Local Personnel	Rep.		
1	Ham Radio Operators		
Support	Veralli Cerre		ļ
·	Youth Camp -		
	Naselle		
	Sons of the Beaches		
	(Jeep Club)		
Volunteers	Long Beach Beach		
	Cleanup		

7.0 EQUIPMENT, CONTINUED

Wei dille Dalah	Pina II-II O			
Wildllife Rehab	Fire Hall – Ocean			
Facilties	Park			
<u> </u>	Fort Canby			
	Willapa Wildlife –			
	Naselle			
	Raymond/ South		·	
	Bend Area			
	Hampton Hardware			
	Harbor Rock			
	East Port Seafood			
	Coast Oyster			
Marinas/Port Docks	Willapa National	Small boat ramp		
,	Wildlife Refuge	•		
	Palix River, Route	Improved boat		
	101 Bridge	ramp		
	Mill Ranch, Naselle	boat ramp		
	River	осич тилгр		
	South Bend (West	boat ramp		
	End)	oou rump		
	Raymond (Ellis	boat ramp		
	Slough)	cour rump		
	Willapa Harbor office	crane		
	and dock	Cruno		
	South Bend (East	boat ramp		
	End)	oout rump		
	Nahcotta	Port of Peninsula	and a supplied to the supplied	
	Tunotta	boat lift		
**************************************	Toke Point	boat ramp		
	Long Island	boat ramp/cable		<u> </u>
	Long Island	ferry		
	Bay Center			
Memorandums of	Day Celliel	boat ramp		
Agreement*				
Housing/Feeding/Res				
ponse Community				
Support*			The state of the s	
Interim				
Storage/Permits*				
Fishing Fleets &				
Affiliated				
Organizations*				
Boat Cleaning				
Capability*				<u> </u>

APPENDICES

Appendix A: Summary of Protection Techniques

Protection Techniques	Description	Primary Logistical Requirements	Limitations
ONSHORE			
Beach Berms	A berm is constructed along the top of the mid-inter tidal zone from sediments excavated along the downgradient side. The berm should be covered with plastic or geo-textile sheeting to minimize wave erosion.	 Bulldozer/Motor grader -1 Personnel - equipment operator & 1 worker Misc plastic or geotextile sheeting 	 High wave energy Large tidal range Strong along shore currents
Geotextiles	A roll of geotextile, plastic sheeting, or other impermeable material is spread along the bottom of the supra-tidal zone & fastened to the underlying logs or stakes placed in the ground.	 Geotextile - 3 m wide rolls Personnel - 5 Misc stakes or tie-down cord 	 Low sloped shoreline High spring tides Large storms
Sorbent Barriers	A barrier is constructed by installing two parallel lines of stakes across a channel, fastening wire mesh to the stakes & filling the space between with loose sorbents.	Per 30 meters of barrier Wire mesh - 70 m x 2 m Stakes - 20 Sorbents - 30 m ² Personnel - 2 Misc fasteners, support lines, additional stakes, etc.	 Waves > 25 cm Currents > 0.5 m/s Tidal range > 2 m
Inlet Dams	A dam is constructed across the channel using local soil or beach sediments to exclude oil from entering channel.	 Loader - 1 Personnel - equipment operator & 1 worker or several workers w/shovels 	 Waves > 25 cm Tidal range exceeding dam height Freshwater outflow

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NEARSHORE			
Containment Booming	Boom is deployed in a "U" shape in front of the oncoming slick. The ends of the booms are anchored by work boats or drogues. The oil is contained within the "U" & prevented from reaching the shore.	For 150 meters Slick: Boom - 280 m Boats - 2 Personnel - boat crews & 4 boom tenders Misc tow lines, drogues, connectors, etc.	 High winds Swells > 2 m Breaking waves > 50 cm Currents > 1.0 m/s
Exclusion Booming	Boom is deployed across or around sensitive areas & anchored in place. Approaching oil is deflected or contained by boom.	Per 300 meters of Boom Boats - 1 Personnel - boat crew & 3 boom tenders Misc 6 anchors, anchor line, buoys, etc.	 Currents > 0.5 m/s Breaking waves > 50 cm Water depth > 20 m
Deflection Booming	Boom is deployed from the shoreline away from the approaching slick & anchored or held in place with a work boat. Oil is deflected away from shoreline.	Single Boom, 0.75 m/s knot current Boom - 60 m Boats - 1 Personnel - boat crew + 3 Misc 3 anchors, line, buoys, recovery unit	 Currents > 1.0 m/s Breaking waves > 50 cm
Diversion Booming	Boom is deployed from the shoreline at an angle towards the approaching slick & anchored or held in place with a work boat. Oil is diverted towards the shoreline for recovery.	Single Boom, 0.75 m/s knot current Boom - 60 m boats - 1 Personnel - boat crew + 3 Misc 3 anchors, line, buoys, recovery unit	 Currents > 1.0 m/s Breaking waves > 50 cm
Skimming	Self-propelled skimmers work back & forth along the leading edge of a windrow to recover the oil. Booms may be deployed from the front of a skimmer in a "V" configuration to increase sweep width. Portable skimmers are placed within containment booms in the area of heaviest oil concentration.	Self-propelled (None) Towed Boom - 200 m Boats - 2 Personnel - boat crews & 4 boom tenders Misc tow lines, bridles, connectors, etc. Portable Hoses - 30 m discharge Oil storage - 2000 liters	 High winds Swells > 2 m Breaking waves > 50 cm Currents > 1.0 m/s

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Appendix B: Original Geographic Response Plan Contributors

Local Representatives

William Bush, Pierce Co. Fire Dist. 3 Larry Claiborne, Pierce Co. Fire Dist. 5 Frank Hamilton, Thurston Co. DEM Timothy Lemon, Pierce Co. Fire Dist. 16 Bill Lokey, Pierce Co. DEM

Industry and Response Contractors

Tim Clark, Clean Sound John Crawford, FOSS Mike Mattingly, AIRO Roland Miller, Clean Sound Robert Rome, Pacific Link Dick Shabro, Olympus Jeff Shaw, ARCO Marine

Federal Representatives

US Bureau of Indian Affairs

Frank Andrews, PAO Chuck James, PAO

US Dept. of Interior

Preston Sleeger

NOAA

Debbie Payton

USFWS

Mike McMinn Jeff Momot

United States Coast Guard

Donald Noviello Kristy Paquette Craig Petersen Len Radziwanowics

State Representatives

Office of Archeology and Historic Preservation

Rob Whitlam

Washington State Department of Corrections

Brian Hauger

Office of Marine Safety

Roy Robertson

State Representatives (con't)

Washington State Department of Ecology

Steve Diddy

Shari Harris - Dunning

Eric Heinitz Brett Manning Jim Oberlander Mike Osweiler

Washington Department of Fish and Wildlife

Brian Benson Thom Hooper Steve Jeffries Sara LaBorde Jeff Skrilitz Barry Troutman

Washington Department of Natural Resources

David Jamison

Oregon Department of Environmental Quality

Paul Slyman

Other

Trout Unlimited

Don Schluter

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Appendix C: Geographic Response Plan Comments/Corrections/Suggestions

If you have any questions regarding this document or find any errors, please notify one of the following agencies: or use tear out sheet (page C-3)

- Washington Department of Ecology, SPPR program, Natural Resources Unit
- USCG Marine Safety Office Puget Sound, Planning Department
- USCG Marine Safety Office Portland
- Oregon Department of Environmental Quality
- Idaho Emergency Response Commission
- Environmental Protection Agency Region 10

Phone Numbers:		Bulletin Board System (BBS):	:
Washington DOE	(360) 407-6972	USCG MSO Puget Sound	(206) 217-6216
USCG MSO Puget Sound	(206) 217-6213	USCG MSO Portland	(503) 240-9308
USCG MSO Portland	(503) 240-9307		
Oregon DEQ	(503) 229-5774		
Idaho ERC	(208) 334-3263		
EPA	(206) 553-6901		

Internet/E-mail Address:

WADOE dald461@ecy.wa.gov OR DEQ WYLIE.Jack@deq.state.or.us

USCG MSO Puget Sound jlehto@pacnorwest.uscg.mil
USCG MSO Portland mwilcox@pacnorwest.uscg.mil
USEPA sheldrake.beth@epamail.epa.gov

Address:

Commanding Officer	Washington Department Of Ecology	Office Of The Governor
United States Coast Guard	SPPR Program	Idaho Emergency Response Commission
MSO Puget Sound	Natural Resources Unit	1109 Main
Planning Department	P.O. Box 47600	Statehouse
1519 Alaskan Way South	Olympia, WA 98504-7600	Boise, ID 83720-7000
Seattle, WA 98134-1192		
Commanding Officer	Oregon Department of Environmental	Environmental Protection Agency
United States Coast Guard	Quality	Emergency Response Branch
Planning Department	Water Quality Division	1200 Sixth Avenue
MSO Portland	811 SW Sixth Avenue	Seattle, WA 98101
6767 North Basin Ave	D11 OD 07204	
0,0,1,010120011111	Portland, OR 97204	

C-1 March 2003

TOC WILLAPA BAY GRP

Geographic Response Plan

Comments/Corrections/Suggestions

Directions:

Fill in your name, address, agency, and phone number. Fill in the blanks regarding the location of information in the plan being commented on. Make comments in the space provided. Add extra sheets as necessary. Submit to: Dale Davis

Department of Ecology
Spills Program

Spills Program 300 Desmond Drive P.O. Box 47600

Olympia, WA 98504-7600 dald461@ecy.wa.gov

Name:	Title:	Agency:
Address:		
		Zip/Postal Code:
Phone: ()	E-Mail:	
GRP:	Paş	ge Number:
1 0 1	section, paragraph) (e.g. 2.1, para	
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C-2 March 2003

Northwest Area Committee c/o Washington Department of Ecology Spills Program Natural Resources Unit - GRP Corrections P.O. Box 47600 Olympia, WA 98504-7600